

Customer No.: 31561
Application No.: 10/065,610
Docket No.: 09668-US-PA

To the Claims:

1. (currently amended) A nucleic acid sequencing method for controlling a nucleic acid sequence, suitable for determining a sequence of the nucleic acid sequence with a thin film having a pore, comprising:

providing a thin film having a pore;

disposing at least a nucleic acid sequence on the thin film, wherein the nucleic acid sequence comprises a plurality of nucleotides;

applying an electric field perpendicular to the thin film, so that the nucleic acid sequence is driven to pass through the pore of the thin film, wherein an adjustable rotating electric field parallel to the thin film is applied simultaneously, in order to control a translocation time of one each nucleotide being a multiple of a basic time unit related to one fourth of a period of the rotating electric field respectively; and

measuring the translocation time of the nucleotides of the nucleic acid sequence and a blockage current of each of the nucleotides over a time and analyzing changes of the blockage currents over the time for the nucleotides to determine a sequence of the nucleic acid sequence.

2. (original) The method of claim 1, wherein the pore has a size of about 2 to 3 nm.

3. (original) The method of claim 1, wherein the thin film comprises a silicon nitride thin film.

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4. (original) The method of claim 1, wherein the pore of the thin film is formed by an ion beam.

5. (original) The method of claim 1, wherein the rotating electric field is formed by one set of parallel electrode pairs perpendicular to another set of parallel electrode pairs, while one set of parallel electrode pairs generate a sinusoid (sine) AC electric field and the other set of parallel electrode pairs generate a cosinusoid (cosine) AC electric field.

6. (original) The method of claim 1, wherein the period of the rotating electric field is smaller than 10^4 Hz.

7. (cancelled)

8. (original) The method of claim 1, further comprising adding two extra sequence fragments to both ends of the nucleic acid sequence for labeling the both ends.

9. (cancelled)

10. (cancelled)

11. (cancelled)

12. (cancelled)

13. (cancelled)

14. (cancelled)

15. (cancelled)

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16. (New) The method of claim 1, wherein the basic time unit is one-fourth of the period of the rotating electric field.